MODEL 2640

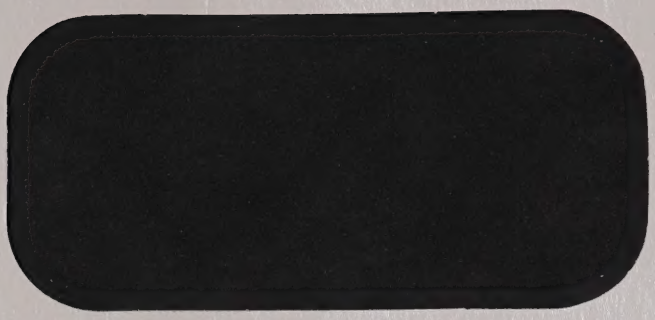
BAND PASS FILTER TEST SET

User's and Service Manual

White

INSTRUMENTS, INCORPORATED

AUSTIN, TEXAS



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Revised 9-27-88

MODEL 2640 USER'S MANUAL

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MODEL 2640 BAND PASS FILTER
TEST SET FOR DISTORTION MEASUREMENTS

The Model 2640 Band Pass Filter Test Set eliminates noise and distortion from a standard 600 ohm test oscillator at any of six selectable frequencies to provide a sine wave source of exceptional purity.

Consisting of one active and five passive band pass filters, Model 2640 is packaged in a small, portable cabinet for convenience. Standard binding posts are used for input and output connections. The filter selector switch has additional positions for testing the active filter battery supply and for turning off the filter set by direct connection of input to output.

The 5 Hz filter is a double-tuned active network having the symmetrical response shown in Figure 1. The remaining five channels are two-pole passive filters having the normalized unsymmetrical response shown in Figure 2. Both designs provide at least 30 dB of attenuation to the second harmonic and over 40 dB of attenuation to the third and higher harmonics.

If the oscillator has less than 0.5% distortion, the output of the Model 2640 filter will contain less than 0.01% distortion, which is 80 dB below the fundamental.

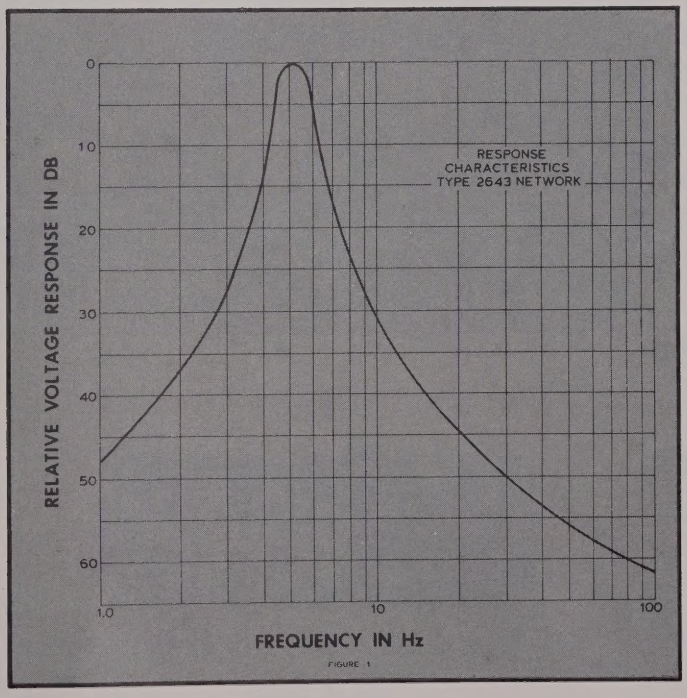


FIGURE 1

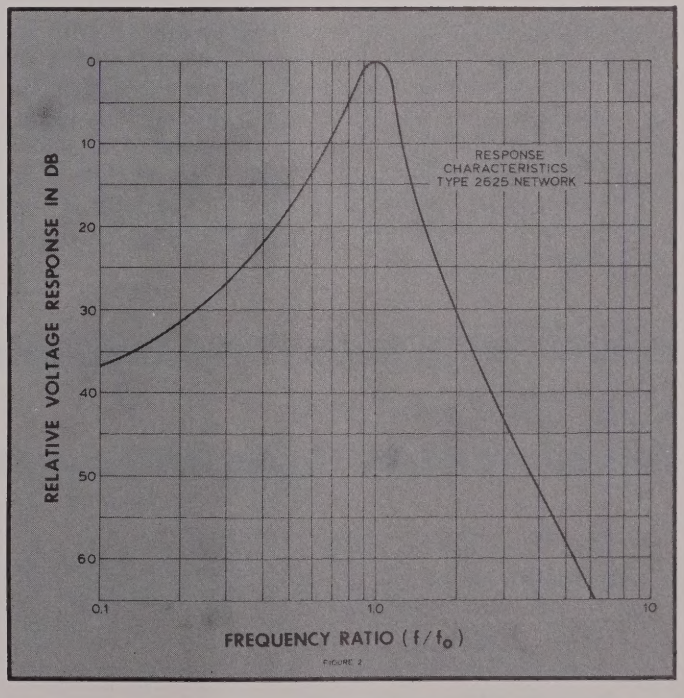


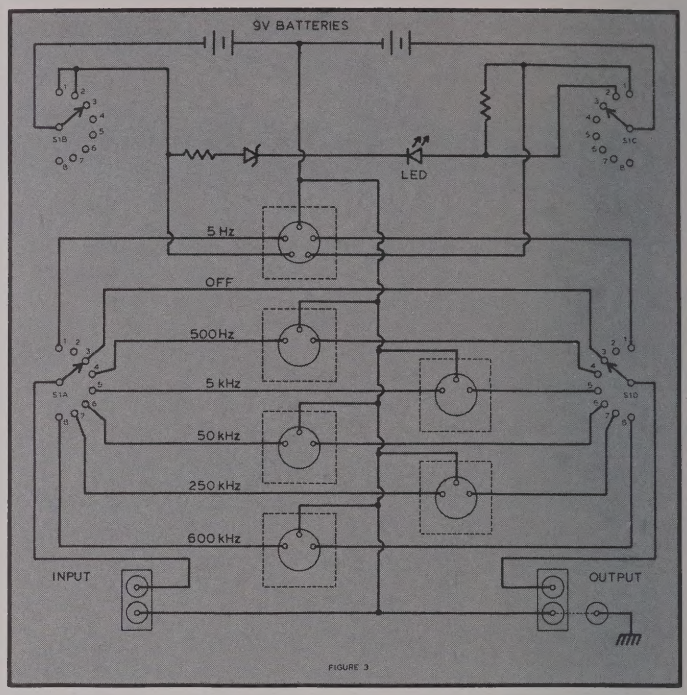
FIGURE 2

CIRCUIT DESCRIPTION

Frequency selection is achieved by switching both input and output to one of six band pass filters as indicated in Figure 3. Two sections of the switch connect plus and minus terminals of the battery to the active filter in the "5 Hz" position. A "BAT TEST" position compares the battery voltage to a zener diode voltage, and the "OFF" position connects the input directly to the output.

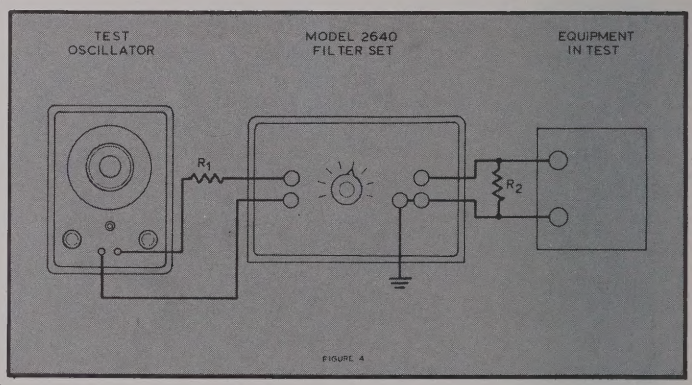
The 2625 passive filters operate from a 600 ohm source into a load of about 100 kilohms shunted by 15 pF for a transmission gain of 0 dB. The 250 and 600 kHz filters will be detuned by additional capacity loading. The 2643 active filter is less sensitive to source and load impedances, but it has a small dc voltage on the output which may require blocking in some applications.

The Indicator Lamp is used to show battery condition and battery operation. New batteries will give brilliance with selector switch in the "BAT TEST" position and about half brilliance in the "5 Hz" position. If lamp brilliance is not detectably greater in "BAT TEST" position, batteries should be replaced.



OPERATION

Typical connection of the Model 2640 is shown in Figure 4. Resistor R_1 is used to raise the impedance of some oscillators to about 600 ohms, and resistor R_2 is used to load the filters to about 100 k when used with high impedance equipment. Using a signal level of less than 3 volts rms, tune the oscillator to the center frequency of the filter and proceed with the measurements.



SPECIFICATIONS

Size: 9" wide x 6" high x 5" deep
Frequencies: 5 Hz, 500 HZ, 5 kHz, 50 kHz, 250 kHz and 600 kHz
Input: 3 volts rms max
Transmission: 0 ± 1 dB at F_0
Source: 600 ohms ± 10%
Load: 100 k ± 20%

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IMPORTANT OPERATING CONSIDERATIONS

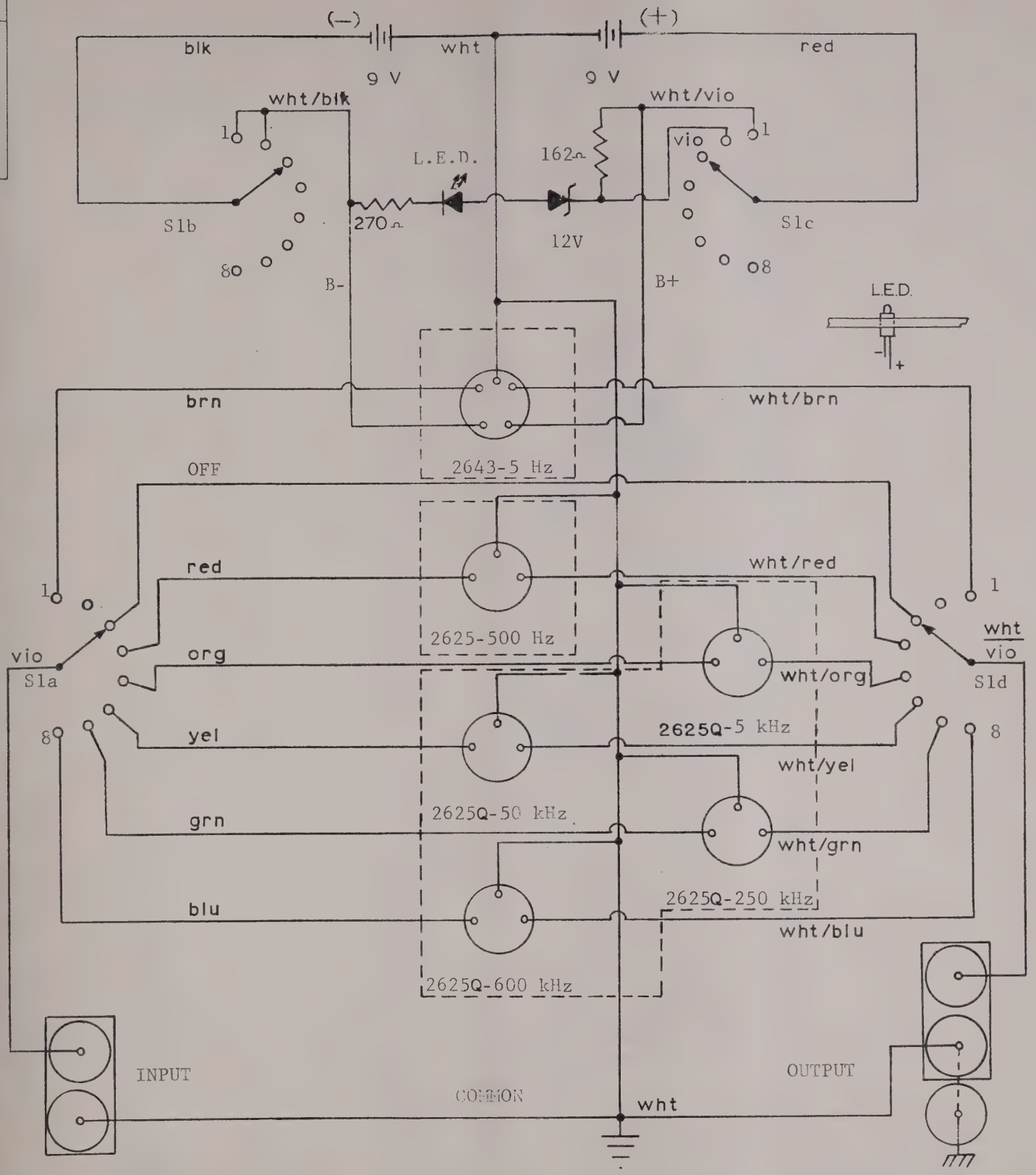
1. The active channel (5 Hz) requires no warm up time. As power is consumed when the switch is in the "Test" or "5 Hz" position, care should be taken to see that the instrument is in the "Off" position when not in use. No power is drawn when the unit is used in the passive modes (500 Hz through 600 kHz).

2. The passive channels (500 Hz through 600 kHz) are designed to work into a load of 100,000 ohms (maximum load capacity of 15 pF including lead capacitance). Short leads to the load are recommended. (Do not use coaxial leads.)

3. The passive channels (500 Hz through 600 kHz) are designed to operate from a 600 ohm source impedance for maximum flat response. The 5 Hz channel is not sensitive to source impedances below 10,000 ohms or load impedances above 10,000 ohms.

4. Best results are obtained when the test frequency is approximately in the center of the pass band of the channel being used.

5. Each channel will produce less than .01% harmonic content at 3 volts rms or less input. Inputs greater than 3 volts rms will increase harmonic content. The filters will not be harmed by overdriving.



REV.	DESCRIPTION	BY	DATE	APP.
G	COMBINED 5,50,250,600 KHZ	THM	11-19-87	
F	Added wire color code.	PBP	4-19-83	
E	Interchanged zener diode & LED.	MKC	7-9-82	
D	Changed to 9V batteries.	JHL	2-9-79	
C	Redrawn	BB	3 1362	

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CIRCUIT DIAGRAM
MODEL 2640
≥ ST. ORD. 656

TOLERANCES		
FRAC.	,DEC.	
SCALE		
	BY	DATE
DRAWN	THM	3 7 87
CHECK		
APP'D.	CVK	3-7-87
DWG NO.		REV
32839		G

DWG NO 32839 REV

TOLERANCES:

DWG NO	REV
B42109	G

SCALE 1=1

	BY	DATE
DRAWN	MW	01-31-68
CHECK	LB	01-31-68
APP'D.	CVR	01-31-68

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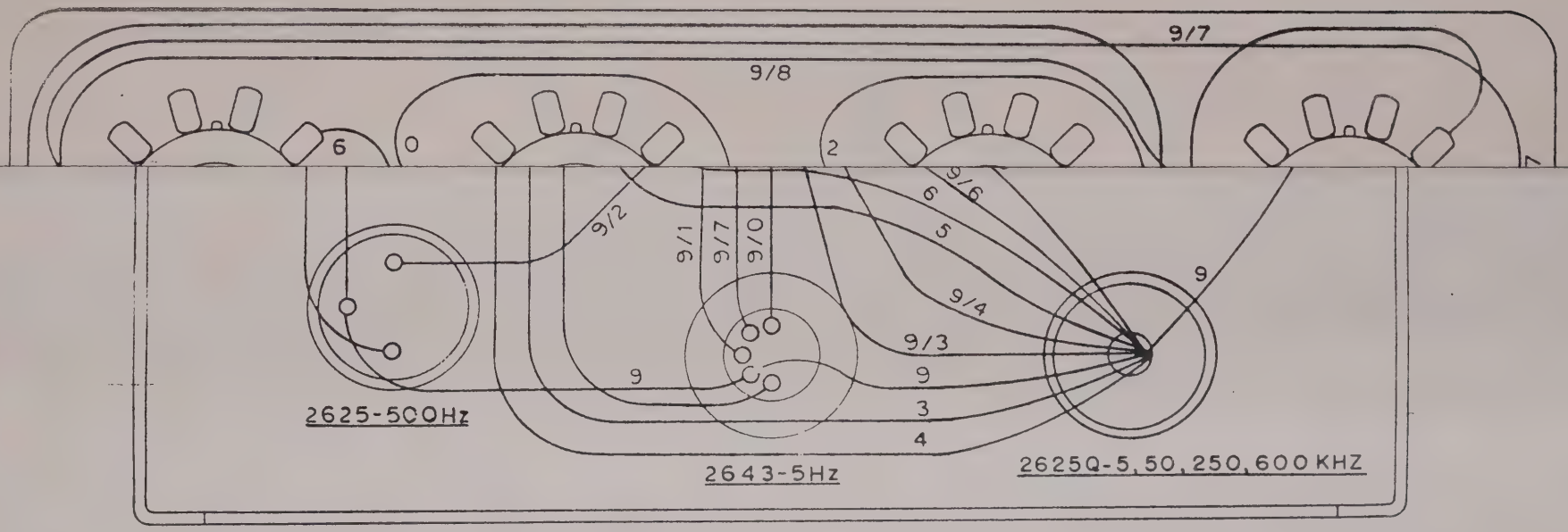
MODEL 2640
WIRING DIAGRAM
≥ SI. ORD. 656

F.	REDRAWN.	11APR83	PBP	4-12	JR
G	REPLACED 2625A'S WITH 2625Q-5,50,250,600KHZ		THM	4-20-87	JR



TOLERANCES

DWG NO	REV
B42109	G

SCALE 1:1

	BY	DATE
DRAWN	MW	01-31-68
CHECK	LB	01-31-68
APP'D.	CVR	01-31-68

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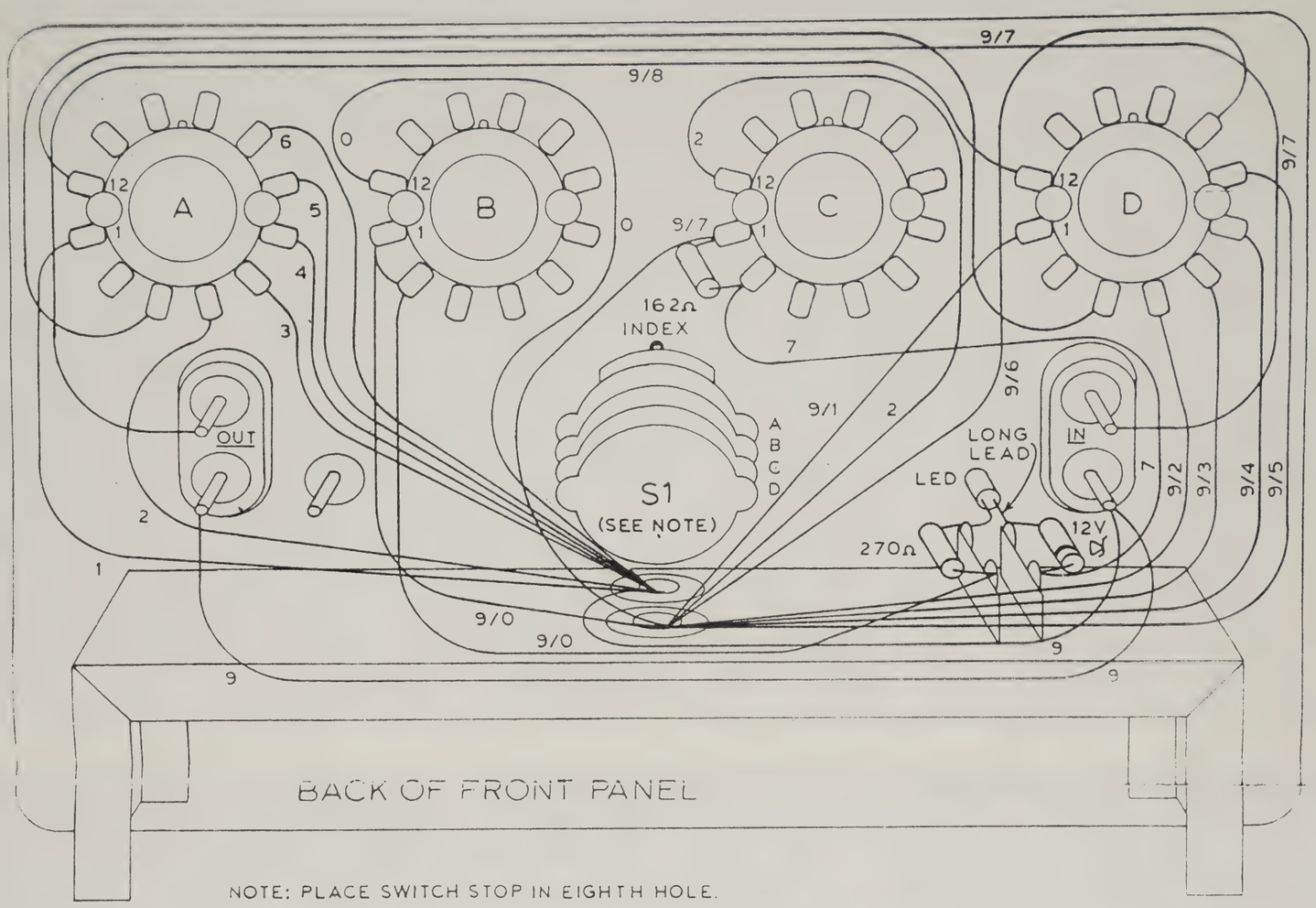
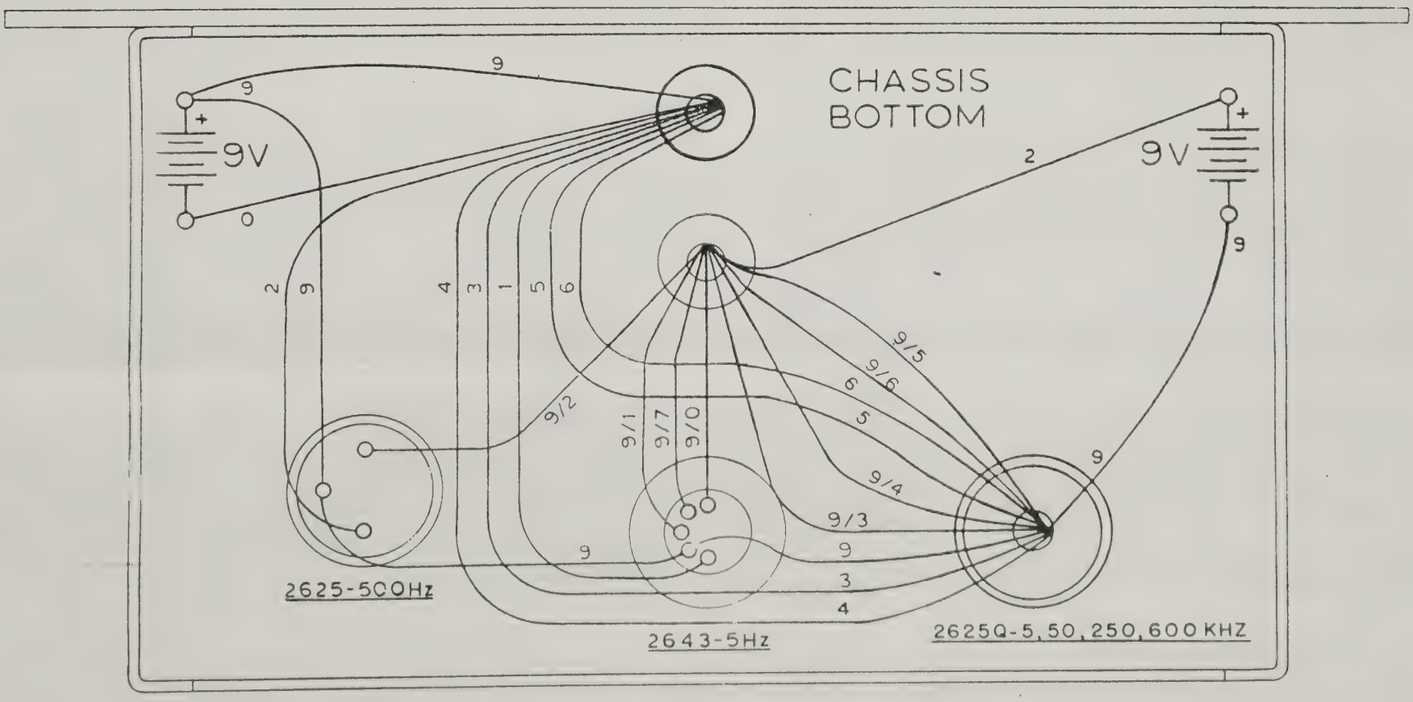
MODEL 2640 WIRING DIAGRAM

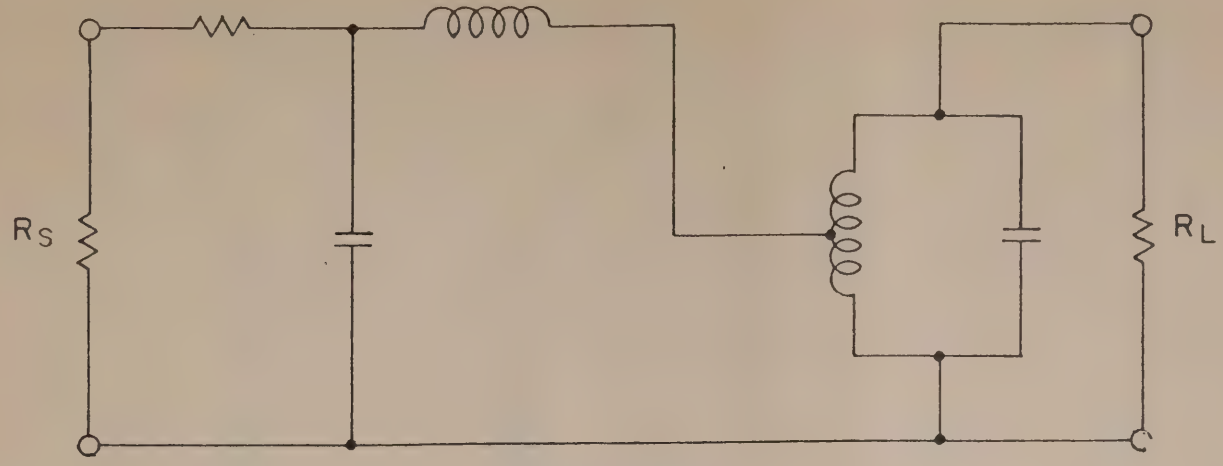
2 SI. ORD. 656

F	REDRAWN.	11APR83	PBP	
G	REPLACED 2625A'S WITH 2625Q-5,50,250,600KHZ		THM	20 APR 87

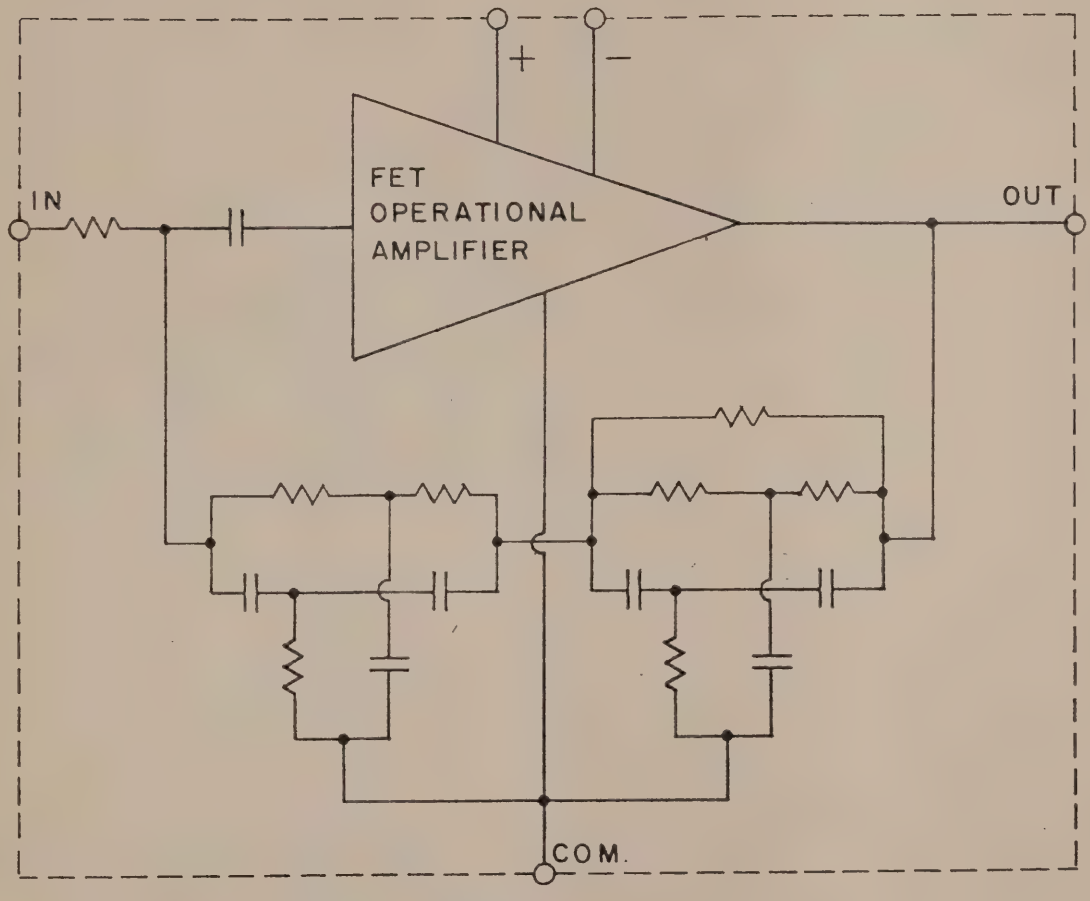


NOTE: PLACE SWITCH STOP IN EIGHTH HOLE.





TYPE 2625-f_o



TYPE 2643-f_o

REV.	DESCRIPTION	BY	DATE	APP.

White INSTRUMENT
AUSTIN, TEXAS

TOLERANCES
FRAC. , DEC.
SCALE

	BY	DATE
DRAWN	DC	2/14/67
CHECK		
APP'D.	MdW	2/14/67

DWG NO
REV

PARTS LIST

MODEL 2640

Type Number	Description	Suggested Sources
IN963 B	Zener Diodé, 12 V	
2625-500 Hz	Passive Notch	
2625Q-5, 50, 250, 600 Hz	Passive Notch	
2643-5 Hz	Active Notch	
MN1604	Battery, Alkaline 9V	Mallory-Duracell
F-101	Pointer Index Flage-Knob, Black	

Revised 9-27-88